

NONCONFIDENTIAL
BRIEF OF APPELLEE
INTERNATIONAL TRADE COMMISSION

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

EPISTAR CORPORATION,

Appellant,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee,

and

PHILIPS LUMILEDS LIGHTING COMPANY, LLC,

Intervenor.

ON APPEAL FROM THE UNITED STATES INTERNATIONAL
TRADE COMMISSION IN INVESTIGATION NO. 337-TA-556.

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Material has been deleted from pages 3, 5, 6, 7, 8, 14, 15, 20, 24, 25, 26, 28, 29, 30, 31, 33, and 34 of the Commission's nonconfidential brief because the material is deemed confidential business information pursuant to 19 U.S.C. § 1337(n); *see also* 19 C.F.R. § 210.5. The material omitted on those pages concerns details related to the structure of the respondent's accused products and details of the confidential settlement agreements between the complainant and the respondent.

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STATEMENT OF RELATED CASES

Counsel for defendant-intervenor Philips Lumileds Lighting Company LLC has indicated to counsel for the Commission that this appeal is or may be related to the following two district court actions:

- *Lumileds Lighting U.S., LLC v. Epistar Corporation*, Civil Action No. C-05-04521 CW (N.D. Cal. Nov. 4, 2005), presently stayed; and
- *Epistar Corporation v. Philips Lumileds Lighting Company, LLC*, Case No. C-07-05194 JF (N.D. Cal. Oct. 10, 2007), which reportedly involves the same settlement agreements discussed in the briefs in this appeal.

STATEMENT OF THE ISSUES

The U.S. International Trade Commission (“the Commission”) disagrees with Epistar Corporation’s (“Epistar”) framing of the issues, and believes the issues are properly presented as follows:

- 1) Whether the Commission correctly determined that Epistar was barred from asserting invalidity of U.S. Patent No. 5,008,718 (“the ‘718 patent”).
- 2) Whether Epistar’s argument that the Commission improperly barred the appellant from asserting invalidity can be dismissed as “harmless error” since Epistar presented, and the Commission considered, the identical evidence relevant to invalidity in addressing whether the prior art asserted by Epistar limited the scope of the asserted claims.
- 3) Whether, in light of the intrinsic evidence, the Commission correctly construed the “transparent window layer” term, as used in the asserted claims 1 and 6 of the ‘718 patent, as not excluding use of indium tin oxide (“ITO”).
- 4) Whether, in light of the intrinsic evidence, the Commission correctly construed “substrate” to be the supporting material in an LED upon which the other layers of an LED are grown or to which those layers are attached, and to include the case in which the supporting material functioning as the substrate is grown on top of, or attached to, the other layers.

STATEMENT OF THE CASE

I. NATURE OF THE CASE AND PROCEDURAL BACKGROUND

The Commission substantially agrees with Epistar's statement of the case (Br. at 5-15), but provides some additional relevant background. This appeal is from the Commission's final determination in the investigation entitled *Certain High-Brightness Light Emitting Diodes ("LEDs") and Products Containing Same*, USITC Inv. No. 337-TA-556. On December 8, 2005, the Commission instituted the underlying investigation based on a complaint filed by Lumileds Lighting U.S. LLC ("Lumileds") alleging a violation of section 337 of the Tariff Act of 1930, as amended, in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain high-brightness LEDs and products containing same by reason of infringement of claims 1 and 6 of the '718 patent.¹ The complaint originally named two respondents, United Epitaxy Company ("UEC") and Epistar, but it was subsequently amended to reflect the December 30, 2005, merger of the two named respondents into a sole company owned and controlled by Epistar. On May 15, 2006, the Commission determined not to review an initial determination ("ID") issued by the presiding Commission

¹ After filing of the complaint, the complainant changed its name to Philips Lumileds Lighting Company LLC. See JA1403-04.

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 administrative law judge (“ALJ”) (Judge Harris) barring Epistar from asserting invalidity of the ‘718 patent. Specifically, in Order No. 14, which the Commission adopted, the ALJ granted Lumileds’ motion for partial summary determination dismissing Epistar’s Affirmative Defense that the asserted ‘718 patent claims are invalid. JA159-76.

On January 8, 2007, the ALJ issued his final ID in the Commission investigation. The ALJ found a violation of section 337 in the importation by Epistar of MB LED products by reason of infringement of claims 1 and 6 of the ‘718 patent, and no violation of section 337 in the importation by respondent of GB and OMA LED products which he found to be non-infringing.² On May 9,

² The product designations are explained as follows: OMA refers generally to Epistar’s [[]]] AlGaInP LED products which use an active LED layer of at least AlGaInP [[

]] An AlGaInP LED refers to an LED that uses an active layer of semiconductor comprised of at least a combination of aluminum, gallium, indium, and phosphorus. An ITO LED refers to an LED that uses a current-spreading layer of indium-tin oxide to enhance LED efficiency with higher light output. The designation OMA II refers to a second-generation of OMA products that Epistar is developing. *See* JA1434-36.

MB and GB refer generally to Epistar’s “metal bond” and “glue bond” LEDs which use an active LED layer of at least AlGaInP [[

]] The designations MB II and

2007, the Commission issued a notice and opinion reversing-in-part and modifying-in-part the ALJ's relevant findings.³ JA7984-85, JA7987-8017. 72 *Fed. Reg.* 38101-2 (July 12, 2007). The Commission adopted the ALJ's finding as to infringement by Epistar's MB LED products of the '718 patent, and reversed the ALJ's finding of non-infringement by Epistar's GB and OMA LED products, based upon the Commission's modification of the ALJ's claim construction of the "substrate" term as used in claims 1 and 6 of the '718 patent.⁴

Epistar appeals the Commission's determination that Epistar is barred from

GB II refer to a second-generation of MB and GB products, respectively, that Epistar is developing. JA1434-36.

For simplicity in this brief, the terms MB I, GB I, and OMA I have been introduced to refer to the first-generation of MB, GB, and OMA LED products as distinct from the second-generation products. Also, unless otherwise specified, the terms "MB LEDs" or "MB LED products" generally refer to both the MB I and MB II LED products; the terms "GB LEDs" or "GB LED products" generally refer to both the GB I and GB II LED products; and the terms "OMA LEDs" or "OMA LED products" generally refer to both the OMA I and OMA II LED products.

³ The ALJ also determined that Epistar's MB, GB, and OMA LED products do not infringe U.S. Patent Nos. 5,376,580 ("the '580 patent") and 5,502,316 ("the '316 patent"). *See* JA6749-6803. These findings are not at issue in this appeal.

⁴ References in this brief to the Commission's determination and findings adopting the ALJ's infringement finding refer to the final ID (JA6667-6876). Other references in this brief to the Commission's determination and findings reversing or modifying the ALJ's final ID refer to the Commission's Opinion (JA7987-8017).

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asserting invalidity by virtue of a [[

]] Epistar does not contest that the LED products subject to this investigation are outside of the [[]] as this term is defined in a separate agreement between Epistar and Lumileds. *See JA177, JA184, JA6742-50. See also* Epistar's letter of September 14, 2007, in response to the Court Order concerning Epistar's motion for stay pending appeal. JA13000-02.

In addition, Epistar appeals the claim construction of both the "transparent window layer" and "substrate" terms, used in claims 1 and 6 of the '718 patent, but does not contest that its accused products meet these limitations as construed by the Commission.

II. STATEMENT OF THE FACTS

Epistar's statement of the facts is selective and argumentative. Accordingly, the Commission presents its own statement of the facts.

A. Relevant Prior Litigation and Merger

From September 1999 through September 2001, Lumileds asserted the '718 patent against UEC in a district court action. *See United Epitaxy Co., Ltd. v. Hewlett-Packard Co., Agilent Technologies, Inc., and Lumileds Lighting U.S.,*

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LLC, No. C 00-2518 CW (PVT) (N.D. Cal., filed Sept. 7, 1999). In that litigation, Lumileds specifically asserted the '718 patent against UEC's absorbing-substrate LEDs (the LED having a lower light absorbing substrate wafer-bonded to the LED active layers) which are part of the [[]]] definition in a subsequently negotiated settlement agreement. *See* JA189. In June 2001, the district court judge (Judge Claudia Wilken) granted Philip's motion for summary judgment that the '718 patent claims were not anticipated, indefinite, or unenforceable, and denied UEC's cross-motion for summary determination of non-infringement, obviousness, inequitable conduct, and misjoinder of an inventor. JA445-70, *cited* at JA163.⁵ On August 30, 2001, Lumileds and UEC settled the litigation by negotiating and executing a Settlement Agreement and Mutual Release ("Settlement Agreement"), Stipulated Consent Judgment, and License Agreement. *See* JA188-207.

As part of the Stipulated Consent Judgment, [[

⁵ Particularly, UEC had cited Nuese prior art in its attempt to render the '718 patent invalid. JA464-67.

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]] JA189.

Subsequently, from January 2003 through July 2004, Lumileds asserted the '718 patent against Epistar in district court. *See Lumileds Lighting U.S., LLC v. Epistar Corp.*, No. C 02-5077 and C 03-1130 CW (PVT) (N.D. Cal.). In that litigation, Lumileds specifically asserted the '718 patent against Epistar's absorbing-substrate LEDs which are part of the [[]]] definition in a

⁶ [[

]] JA198, ¶ 2.4.

subsequently negotiated settlement agreement. *See* JA177. In July 2004, Lumileds and Epistar settled the litigation by negotiating and executing a

[[

]] *See* respective letters of Epistar,

Lumileds, and the Commission (all filed on September 14, 2007) in response to the Court Order concerning Epistar's motion for stay pending appeal. *See also* JA177, JA184, JA6742-50, JA13000-06.

In August 2005, UEC and Epistar signed an agreement, effective at the end of that year, to merge completely the two companies. JA913-23; *see* JA 3345-46.

On December 8, 2005, the Commission instituted the investigation underlying this case, naming UEC as a respondent with respect to assertions concerning the '718 patent, and Epistar as a respondent with respect to assertions concerning the '580 and '316 patents. JA244-48. Shortly thereafter, on December 30, 2005, the merger between UEC and Epistar became effective. JA608, JA913-23. As part of the merger agreement, Epistar, as the surviving company, agreed that, as of the merger date--

all the assets, debts, rights, and obligations (including, but not limited to the patent right, copyright, trademark right and contract, etc.), which are still valid up to the merger benchmark date, of the company to expire [UEC] shall be borne by the company to exist as a whole [Epistar]. All the lawsuits, non-lawsuit cases, arbitrations, and other procedures, which continue to be valid, of the company to expire at the merger benchmark date shall be borne by the company to exist as the party concerned. JA920, Art. 13.

As such, Epistar assumed all of UEC's contractual and patent-related rights and obligations, as well as UEC's status as a party to the Commission investigation.

Subsequent to the merger and the ALJ's ruling in Order No. 14, Lumileds amended its complaint to name Epistar as the sole respondent and to assert the '718 patent against additional products of the surviving respondent. *See* JA159-76, JA1434-38. These amendments were unopposed, and no party petitioned the Commission for review of the ALJ's Order (Order No. 29) granting Philip's

motion to amend. *See* JA1530-31.

B. Background of Invention and Patent at Issue

The '718 patent is entitled "Light-Emitting Diode with an Electrically Conductive Window."⁷ The patent includes apparatus claims directed to an LED with a special electrically conductive, transparent window layer grown on top of the active LED layers of the semiconductor device in order to enhance current spreading (less light absorption) and thereby provide a higher light output and improved LED efficiency. JA6 [col. 2: 4-8]. The particularly claimed invention includes a semiconductor substrate, an electrical contact to the substrate, active layers for AlGaInP overlying the substrate, a transparent window layer of semiconductor different from AlGaInP (higher electrical conductivity and lower resistivity than AlGaInP) overlying the active layers, and an electrical contact to the window layer. JA6[col. 2: 11-18, 57-59], JA7[col. 3:6-10].

Generally, a surface-emitting LED (used for many types of LED displays to emit visible light at particular wavelengths) comprises an absorbing substrate on which several epitaxial layers are grown to form the LED. These epitaxial layers

⁷ The patent issued on April 16, 1991, and was originally assigned to Hewlett-Packard Company as recorded by the USPTO. JA2. After a series of name changes and further assignments, on October 16, 2000, the USPTO recorded an assignment of ownership document for the '718 patent executed by Lumileds. The patent expires on December 18, 2009.

may include an n-type confining layer of AlGaInP grown on top of the substrate followed by an active layer of the same material, and then a p-type confining layer of the same material topping the active layer. A front, opaque electrical contact is typically provided on the front or emitting face of the LED and a back electrical contact is provided on the substrate. JA3[Fig. 1], JA6[col. 1:17-32].

Commonly, efficient operation of this type of LED depends on current injected from the front metal contact spreading out laterally to the edges of the LED chip so that light is generated uniformly across the “p-n junction” (a sandwich of upper p-type confining layer, active layer, and lower n-type confining layer). However, when the sheet resistance of the upper p-type confining layer is not low enough, the current will not spread sufficiently and will tend to flow directly down beneath the front contact toward the back contact, resulting in most of the light being generated under the opaque front contact. When this type of “current crowding” occurs, “much of the light generated in this region is blocked and absorbed within the LED chip, thereby severely limiting the efficiency of the device.” JA6[col. 1:33-46].

According to the ‘718 specification, known techniques to solve this “current crowding” problem were not satisfactory, because these techniques spread the current through the use of opaque metal patterns that block light emission.

Another technique that uses transparent contacts, such as a transparent front contact comprised of indium-tin oxide (ITO), was unsatisfactory as well, since these transparent electrical contacts did not solve the “current crowding” problem. JA6[col. 1:57-col. 2:1-3].

To solve these prior art difficulties of “current crowding” and high resistivity in the LED, the claimed invention teaches providing a transparent window layer of semiconductor, having a higher electrical conductivity (and therefore lower resistivity) than AlGaInP, overlying the active AlGaInP LED layers to distribute current from the front contact to the active layers. This results in more uniform emission of light throughout the p-n junction and improvement in the efficiency of the device. JA6[col. 2:4-30].

The specification describes and illustrates two exemplary embodiments of an LED constructed according to the principles of the claimed invention. JA6[col. 2:48-50, 60], JA7[col. 4:36-56]. Particularly, the specification describes an LED “having active p-n junction layers of AlGaInP overlain by a transparent window layer of semiconductor different from AlGaInP, with a low resistivity and a bandgap greater than the active layers, so that the overlying layer is transparent to light emitted by the p-n junction.” JA6[col. 2:11-19]. The specification describes this first embodiment as “[a]n exemplary light emitting diode (LED) constructed

according to principles of this invention [that has] an n-type substrate" with overlying active layers and a transparent window layer overlying the active layers. JA6-7[col. 2:48-col. 3:5].

In an alternative embodiment, the specification describes growing an LED from "epitaxially growing active AlGaInP layers on a GaAs temporary substrate, epitaxially growing on the active layers a layer of semiconductor having a crystal mismatch with GaAs and a bandgap greater than the bandgap of the active layers, and selectively removing the GaAs temporary substrate" and further discloses that "this leaves a layer of transparent semiconductor adjacent to the active layers which has sufficient thickness to provide the strength of a substrate." JA6[col. 2:20-30].

C. Claims at Issue

The Commission found that the respondent's products infringe claims 1 and 6 of the '718 patent. Claim 1, from which claim 6 depends, states:

1. A light-emitting diode comprising:
 - a semiconductor substrate,
 - an electrical contact to the substrate,
 - active p-n junction layers for AlGaInP over the substrate for emitting light,
 - a transparent window layer of semiconductor different from AlGaInP over the active layers and having a bandgap greater than the bandgap of the active layers and a resistivity lower than the active layers, and

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a metal electrical contact over a portion of the transparent layer.
JA8[col. 5:33-44] (emphasis Added).

D. Relevant Commission Findings

1. Epistar's Bar to Asserting Invalidity of the '718 Patent

As noted, Lumileds moved prior to trial for a partial summary determination to dismiss Epistar's Affirmative Defense that the '718 patent claims are invalid. Specifically, Epistar had proffered one ground on which it intended to contest validity, *viz*, that the '718 patent was invalid in view of a single prior art reference -- U.S. Patent No. 4,495,514 ("Lawrence"). *See* JA632, JA648-49.

In view of the UEC-Lumileds Consent Judgment and Settlement Agreements, along with the UEC-Epistar merger agreement, the ALJ found that the merged company, Epistar, was precluded from raising an invalidity defense in the Commission investigation.⁸ JA159-76 (Order No. 14). The ALJ found that "the language of the [UEC-Lumileds settlement agreement] clearly expresses that it was intended to cover those future cases regardless of the products at issue" and that [[

⁸ In making his determination, the ALJ examined, *inter alia*, the Epistar-UEC merger agreement along with declarations from experts in Taiwanese law, which governs the interpretation of that agreement. *See* Order No. 14 at 2. The Lumileds-UEC and Lumileds-Epistar settlement agreements [[
]] *See* JA 200, ¶ 10 (UEC agreement), JA 184, ¶ 13.2 (Epistar agreement).

]] JA170, *citing* JA198. Further, the ALJ noted that “when the parties [UEC and Lumileds] meant a provision to have limited application with respect to specific products, such limitations were clearly expressed.” JA171, *citing* JA198.

In addition, the ALJ noted “that Article 13 of the [UEC-Epistar] Merger Agreement and Article 24 of the BMAL [Taiwanese Business Mergers and Acquisitions Law] clearly spell out that through the merger, Epistar has assumed *all* of UEC’s rights and obligations and is, therefore, UEC’s successor.” JA175 (emphasis in Order No. 14), *citing* JA869-70, JA920. The ALJ determined that those legal obligations that Epistar assumed from UEC “are binding as a whole on Epistar and may not be limited by Epistar in an attempt to pick and choose by which of the obligations it will abide.” *Id.* Accordingly, the ALJ determined that Epistar, now standing in UEC’s shoes, is barred from raising an invalidity defense to the assertion of infringement of the ‘718 patent against any product, including “future products.” *Id.*

2. Claim Construction and Infringement

The claim construction issues on appeal relate to the ALJ’s finding, adopted by the Commission, concerning the construction of the “transparent window layer” term, and the Commission’s construction of the “substrate” term.